NAME Reed C. Rollins

Class ..... Course Ecology Party .....

OK PRS

University of Wyoming
Summer Camp.

FIELD NOTES

University of Wyoming
Summer Camp
1955

THE FREDERICK POST

MANUFACTURERS OF
EQUIPMENT AND SUPPLIES FOR
ARCHITECTS, ENGINEERS & SCHOOLS
P. O. Box 803
CHICAGO

Plant Ecology

Reed C. Rollins

Lecture + Field Notes.

Introduction
Method and History
The plant
Environment
Interaction of Environment + plant.
a. Individual plant
b. Plant Communities.
Applications -

Oikos or affairs of the household = Ecology -
plant in relation to its environment.
plant identity necessary -
Ecologists borrow from other branches of Botany
as well as other sciences -
In plant ecology one must depend on
diagnoses - partially depends on familiarity
and general aspect. This is gained thru
systematic study

Plant Geography - distribution of plants over world.
Floristics - distribution of types of plants -
The distribution of a Genus for instance.
Vocabulary -
Ecology has two aspects -
1. Individual - Autecology
2. Community - Synecology

Ecology has been long been a na

Von Humboldt - 1800 approx - Cosmos.

1895 Warming - Danish - First text -

1. Dicsmuss factors etc - (attention focused on on small area)

1898 - Schimper, A.F.W.

Plant Geography on a physiological basis.

Made an attempt to tie up world vegetation with

Phytogeography of Nebraska 1898 - work engineered by students at Nebraska -

Pound & Clements -

always concerned with water - pattern in soil also worked with grasses - detail analysis of grass land - stressed importance of statistics. Natural since grasses are so small - analysis not so important in forests -

Cowles - at Chicago - 1898

Worked at land & sensed erosion & deposites. On boundary between grass & forest - was impressed with physiographic change -

Modifications caused by

1. Wind
2. Water
3. Time.

Chicago school depended upon

Scandinavians & Swiss made great progress in study of Ecology -

Sources

Textbooks -

1. Weaver & Clements -
2. A Textbook of Botany Chicago - Cowles - Autecology
3. Tansley & Clip - Aims & methods in the study of vegetation - ~~for~~ Tansley - professor of botany at Oxford -
4. Colorado plant life - Ramaley -
5.

Journals -

Ecology -

— ·· — ·· — ·· — ·· — ·· —

Application

Ecologist has more or less of a synthetic view point. Analysis - then syntheseizes or puts together - problems must be worked out in the field - not as precise as physiology for instance -

little application in this country - rather widely used abroad. Ecology rapidly touches social & political ramifications -

what causes plants of the same type to be retarded in localized areas? Local factors i.e. Snowdrift; clump of trees, angle of exposure to sun etc - Edaphic factors in other words.

There is a reciprocal action between plants and their environment

Physiographic factors play upon the nature of plant growth as well as the seasonal growth - physiographic factors may be aided or counteracted by other factors such as moisture, Biotic factors etc.

Local factor may delay plant growth –
edaphic factor
1. Snow melts earlier in certain
2. plant affect environment = Environment
effects plants.

weeds = dry situation
Valariana
polygonum
Eriogonum
yarrow

wet situation – spring
onion
saxifrages
cinquefoil
Buttercup –

Bunn 1867 – north of camps
Biotic factor – Grazing.
Bunn –
Erosion –

plants come in because of adaptability to
physiographic factors condition.
Hydrophytes

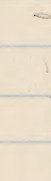
Physiography = Form or nature of the earth's crust.

annuals reproducing entirely by seed, must of necessity start in bare ground (devoid of competition

The Picea - Abies community seems to be the culmination of the succession at around 9 to 10 thousand feet in the W. Boreal. North of camp a secondary succession is in progress.

On bare rocks lichens are the pioneer community. They break up rocks in two ways

1. Dissolution with organic acids
2. Mechanically by contraction when wetted,



Picea sitchensis
Spruce

Pinus contorta
Lodgepole pine

Pinus ponderosa
Ponderosa pine

Pinus monticola
White pine

Pinus lambertiana
Sugar pine

Pinus jeffreyi
Jeffrey pine

Abies concolor
White fir

Abies magnifica
California red fir

Abies grandis
Grand fir

Abies amabilis
Pacific silver fir

Abies nobilis
Noble fir

Tsuga heterophylla
Western hemlock

Tsuga mertensiana
Mountain hemlock

Pseudotsuga taxifolia
Douglas fir

Libocedrus decurrens
Incense cedar

Thuja plicata
Western red cedar

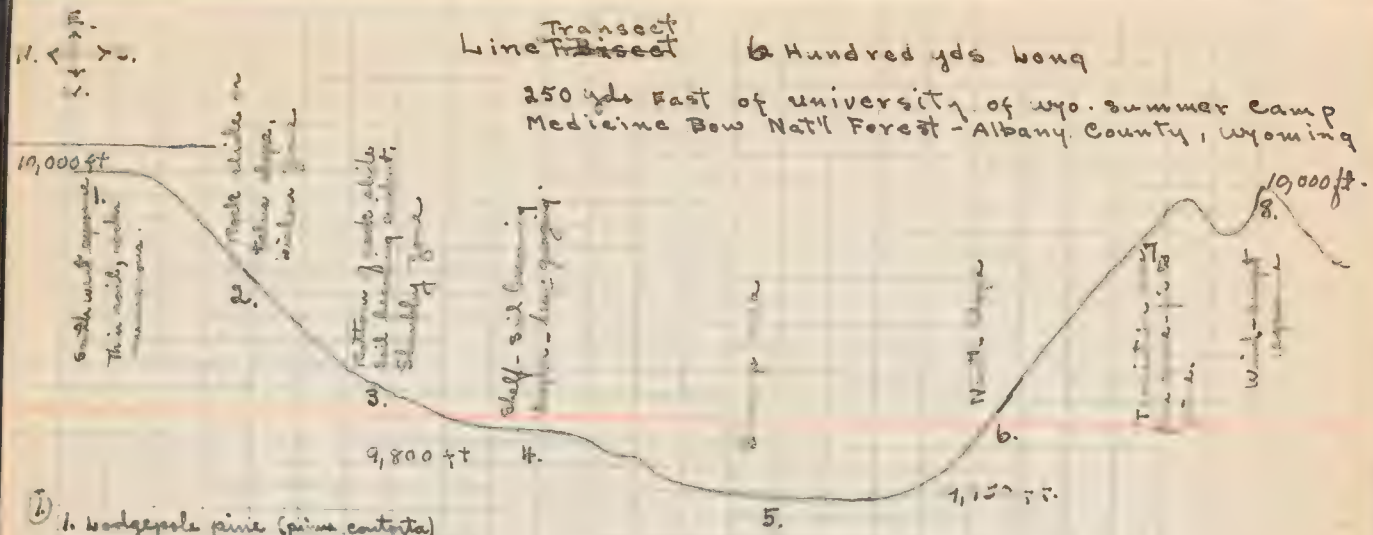
Chamaecyparis lawsoniana
Port Orford cedar

Juniperus occidentalis
Western juniper

Taxus brevifolia
Western yew

Line Transect ~~Transect~~ ~~Bisect~~ 6 Hundred yds long

250 yds East of university of wyo. summer camp
Medicine Bow Nat'l Forest - Albany County, Wyoming



1. 1. Lodgepole pine (pinus contorta)
2. Aspen (populus tremuloides)
3. Ribes cereum (currant)
4. Elder (sambucus melanocarpa)
5. Rose (rosa woodsii)
6. Juniper (juniperus communis)
7. Huckleberry (vaccinium scoparium)

2. 1. Willow
3. 2. [illegible]
3. "
4. Elder (sambucus melanocarpa)
5. Rose (Rosa sp.)
6. [illegible] (Populus tremuloides)

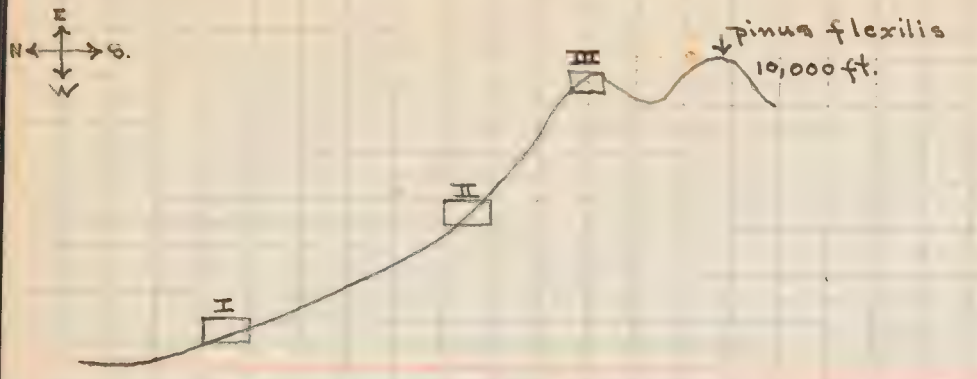
4. Spruce (picea engelmannii)
Everlasting (antennaria sp)
[illegible]
[illegible]
phlox & [illegible]
[illegible]
[illegible]
Carex sp.

5. Willow - (salix sp)
Rushes (juncus ater)
Sedges - (carex)

6. [illegible]
Fir
[illegible]

7. [illegible]
Fir
[illegible]
[illegible]

8. [illegible]
[illegible]
Fir
[illegible]



Temperary list quadrat approximations
taken at various levels on the north slope
below the timberline camp.

I. Trees under 6" D.B.H.

82.4% Fir (Abies lasiocarpa)
17.6% Spruce (picea engelmanii)

II. Trees 6" or more D.B.H.

54.5% Spruce
44.4% Fir
1.1% pine (pinus contorta

III. Trees 6" or more D.B.H.

67.3% Fir
23% Spruce
9.7% pine

competition.

tin

Date

7.5

230 ft

average ... all ...
of ... humidity = 47.5 – 63°

47.5 – 63

116 63

8

7.5

1691

Transect No II

pine | spruce | fir | underbrush

Sept 1st | Sept 1st | Sept 6th

13 | 27 | 7/31

Transect 5 ft per cent to south. No II

16 | 10

pine | spruce | fir | underbrush

37
40
33

31 | 36 | 199

Arbutus
Vaccinium
Fragaria
Rosa
Rubus
Spiraea
Epilobium
Aralia
Cornus
Ribes

Temp 72 shade.

74

35 -

53 72.5

ave. 50 - 68

331

110 57 - 5

ave.

Shade.

170

Population Counts

Totals Data

Pine plat I

Sdg	sp	6-	6+	st	gm
38	0	3	50	100	31
	plat II				
7	16	43	68	115	10
	plat III				
223	0	0	0	0	0
	plat IV				
15	26	59	9	0	0

Spruce plat I

sdg	sp	6-	6+	st
54	13	6	7	0
	plat II			
0	0	2	1	0
	plat III			
0	0	0	0	0
	plat IV			
4	5	8	3	0

Fir

plat I				
87	27	38	36	0
plat II				
17	0	0	1	0
plat III				
0	0	0	0	0
plat IV				
20	22	11	0	0

Temperature

av. sun. 82.7

av. shade 71.5°

Quadrat I

Quadrat II

July 7 - 8 2.

Quadrat I

Quadrat II

July 6, 1926

Specimen 2

aquaria – July 1

Temp 84°

Range & Variation | in
1. Woody & herbaceous
2. Suffering
3. plasticity of structure & plants
a. Environmental - influence
1. produces
b. Developmental - [illegible]
c. Genetic variation - not plastic
d. Mutation - sport
extends range of plants -
Each species or variety is adapted to live within a certain range of conditions within this range the optimum conditions may be found. The further away from the optimum conditions the more the plant must be protected.
This optimum is an interaction of several factors - moisture, temp., soil conditions etc.
An inherited tendency allows plants to vary within limits

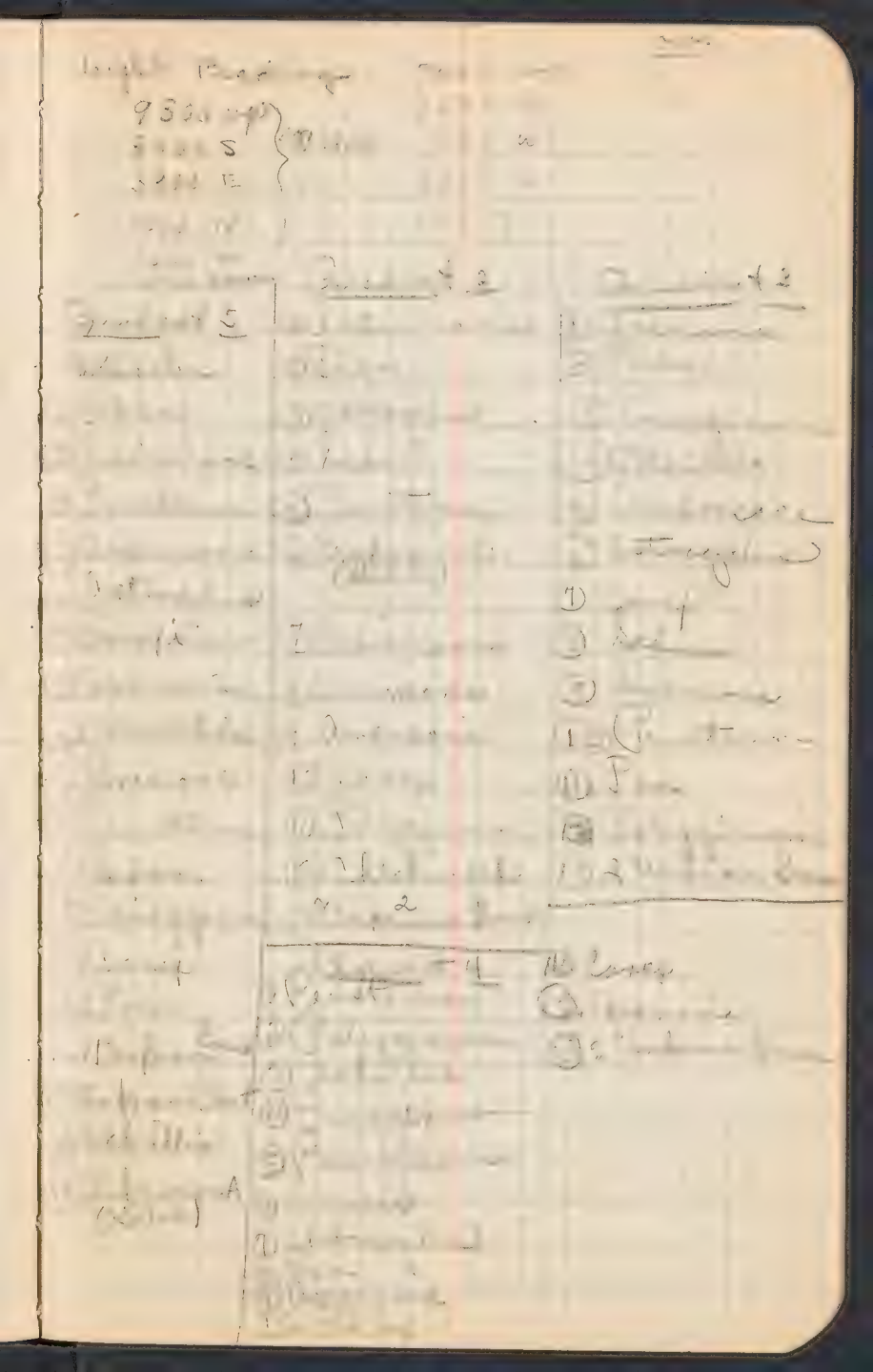
2147 ft per step

2147 ft per step.

Station	0	5
1	71	58
	82	
	81	
	20	
	10 E	10?

Temp. 68°

	wet	dry	
Humidity	64	5	0 13 W.

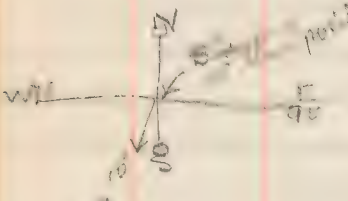


Reading the Prentice Compass

Variation in Med. Bowman 15½ E. of
True north

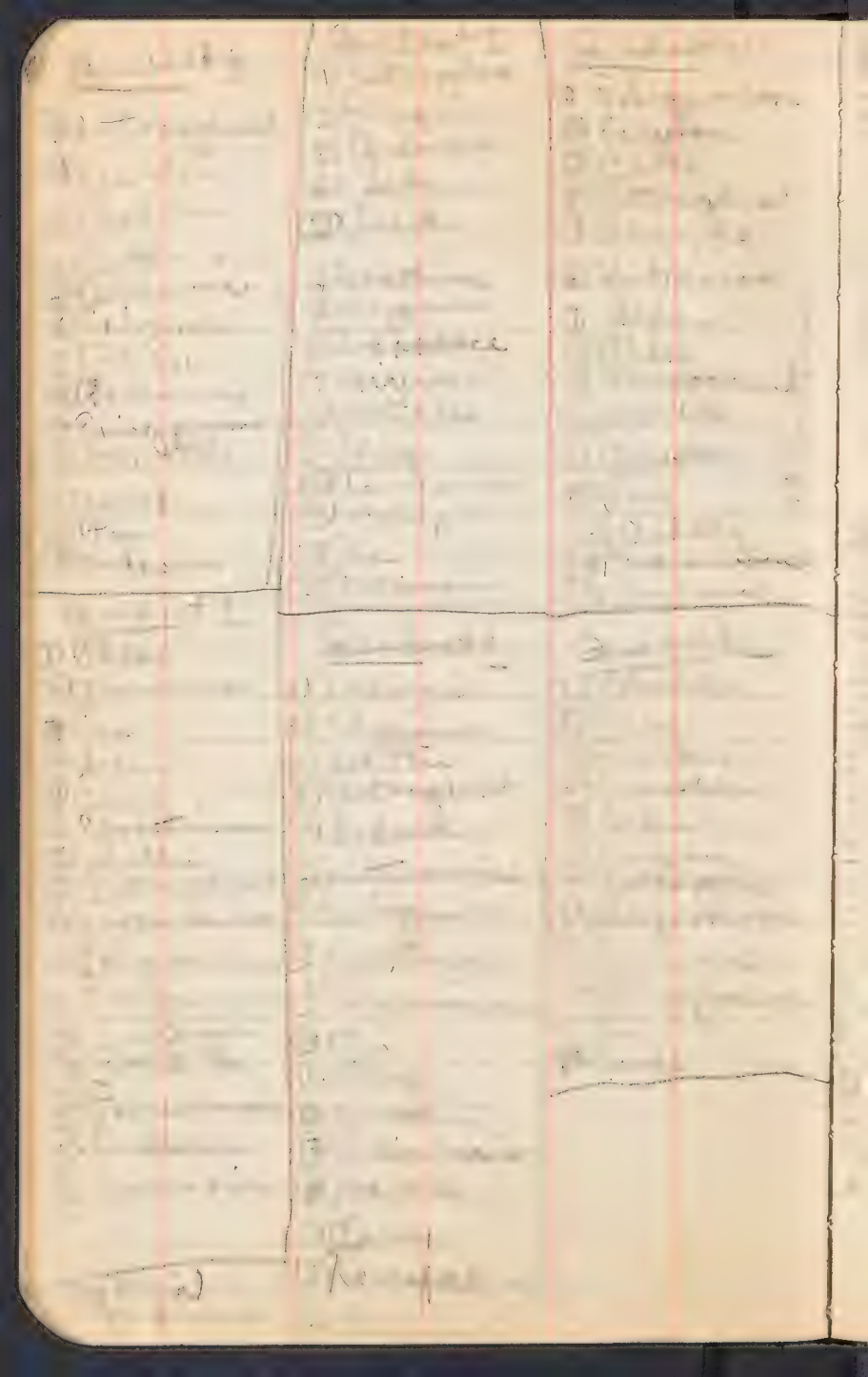
Variation - angle between true north
and magnetic north

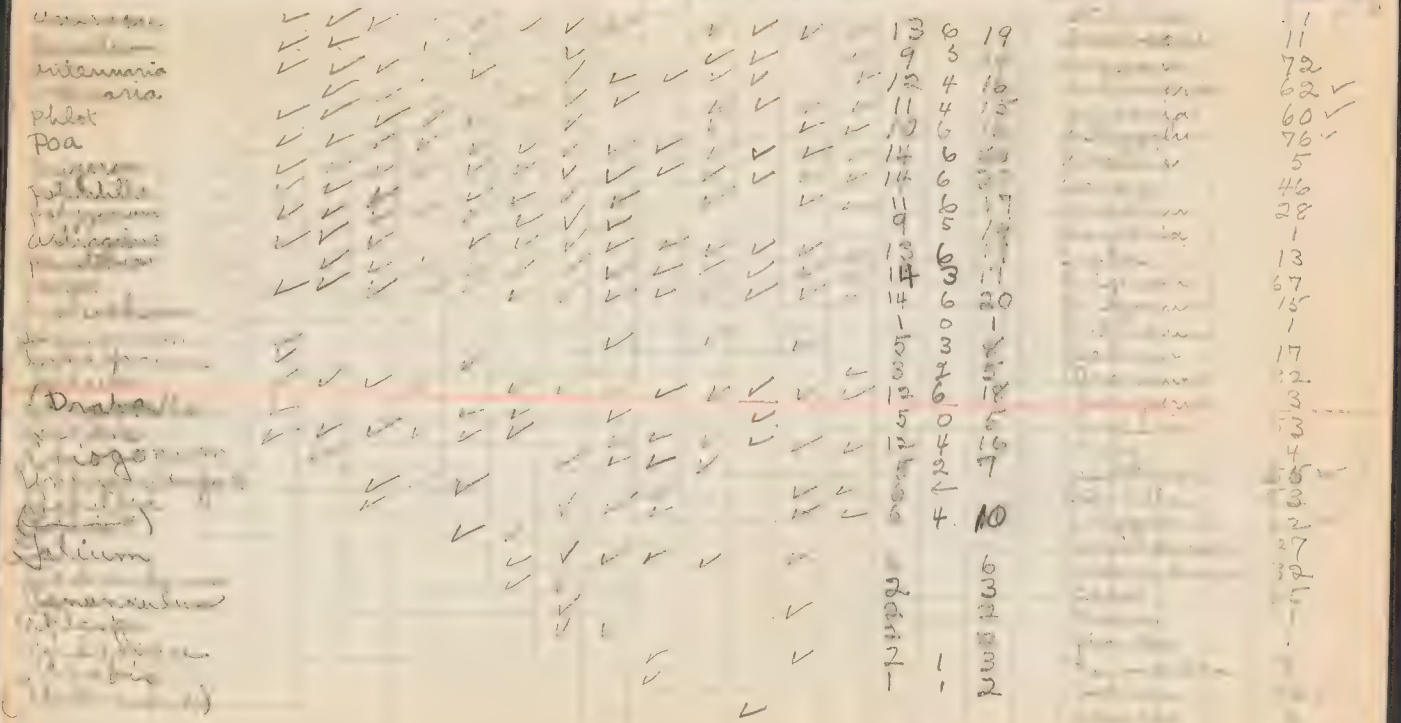
declination - angle in vertical plane
dip - towards magnetic pole



1. Always read opposite the point
and to the right
2. Before reading the number of degrees
read between which figures and
which is the north point of the
needle lies.
3. Read degrees.

1. Hold for an object in hand and level with the universal bubble.
2. Turn front sight half up.
Adjust head until object can be seen in the mirror.
The sights are probably crossed - move head to one side or the other until sights are parallel.
Swing the body until the sights are on the object.
Read.





Composition lichénique

Associations lichéniques

Conditions biologiques

Conditions écologiques

Conditions physiques

Conditions chimiques

Conditions climatiques

Conditions édaphiques

Conditions biologiques

Conditions écologiques

Conditions physiques

Conditions chimiques

Conditions climatiques

Conditions édaphiques

[illegible] July 5, [illegible]

[illegible]

[illegible]

Station A [illegible] 10.17 A.M. 44.5 °C

[illegible] 4

[illegible] 3[illegible]

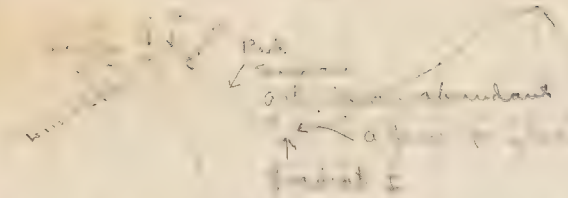
	[illegible]	[illegible]	[illegible]	2.30
[illegible]	44[illegible]	31 [illegible]	[illegible]	[illegible]
[illegible]	45	[illegible]	[illegible]	[illegible]
[illegible]	36	[illegible]	[illegible]	1[illegible]

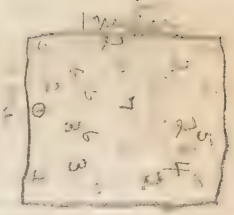
Wind Velocity Measurements

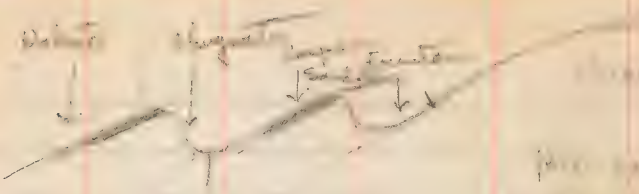
Sta. 2:	176 ft	2 min.	33
Sta. 3:	1313.7 ft	2 min.	5760
Sta. 4:	1826 ft	2 min.	12

Temperatures

A — B — C —







July 10, 1931

Climate is not fixed entirely - changes are occurring.

Valleys are particularly good for ecological studies.

Marine [illegible] plains + mountain vegetation.

Flood plain vegetation - willows - alder

Mesic in valleys

South slopes = xeric - (pines)

North slopes more or less mesic

Spruce + fir mixed in with pine

Native vegetation disturbed.

a. Secondary communities

b Relicts (relicts)

Old flood plains on down from

in city camp

[illegible]

Crew basis

Number of quadrats

1. glass (wood quadrats)
2. Small capitals (wood [illegible])
3. Large " (Cloth tape)

Composed of

Feldspar (+ titanium + mg)

Mica

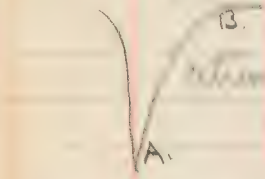
Number of species

1,

Structure des parasites leur adaptation à variabilité et conditions.

Appétits fonctions physiologiques fonctions de relation

phyiographic change causes



Development usually tends to make ... more uniform. A peneplain is an expression of diminished differences. Vegetation has a profound effect on topography and habitat factors.

4. Soil development:

Soil is result of long slow change addition of humus & dead plant material. One of the practical effects is to increase the water holding capacity of the soil.

plant succession.)

1. Profound effect on distribution of plants
2. Short cycles of climate at points of extreme ... not well marked in most plants

3. genuine succession in terms of climatic phenomena as factor.

Primitive
Fructus
Change

37-38

37 cl

84°

162 - [illegible]

182 "

38 + 16 = 200

41 + 18 = 224

12 Sat 11 A. Forenoon

10 : 7 3:15

Temp. 64.5

Salix - Vaccinium

10:30 3:30

5°C 38°C

53-63°

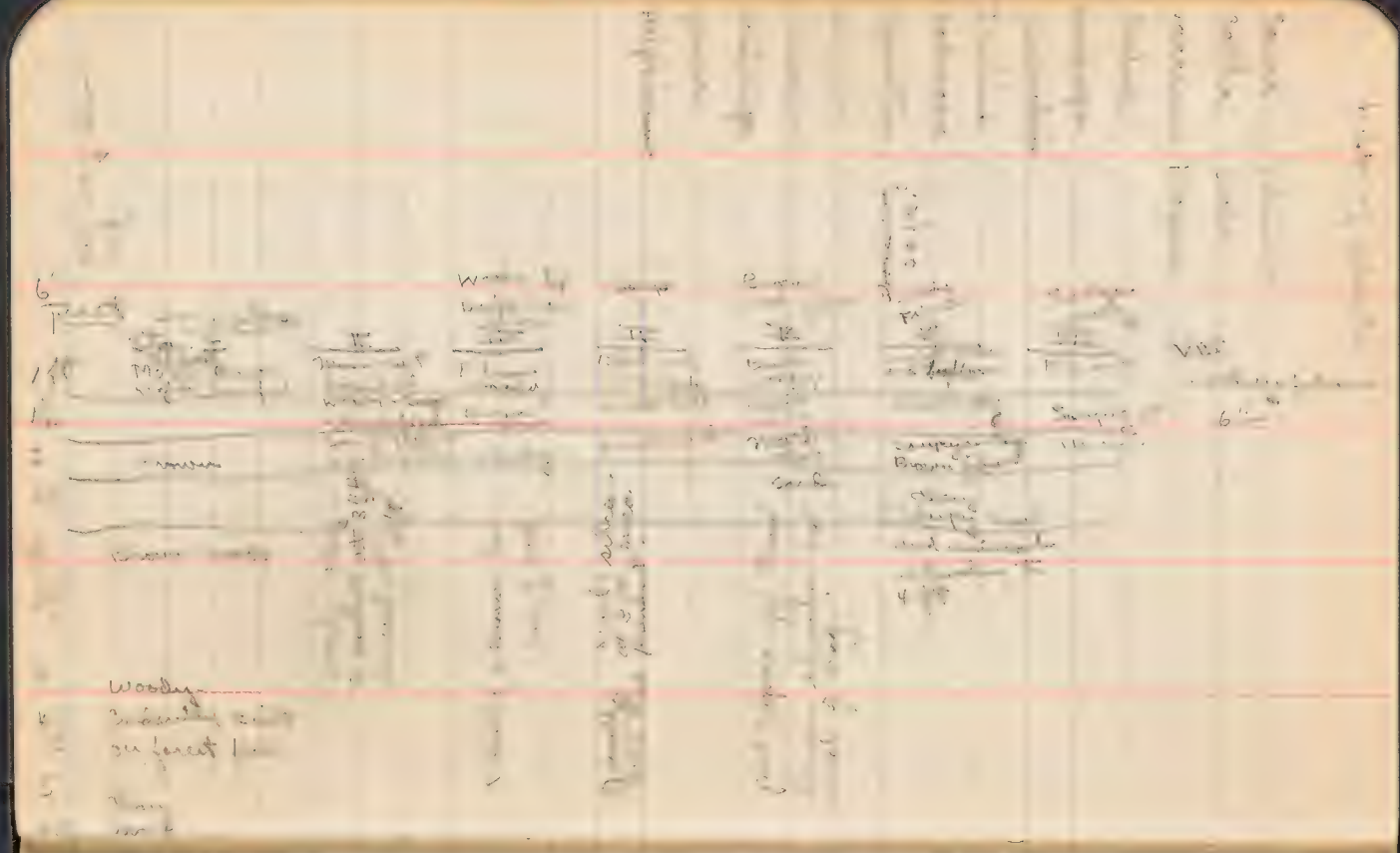
.8 mi. per hr. N.E.

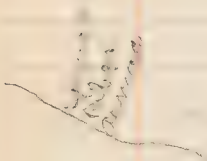
10 A.M.

3:15

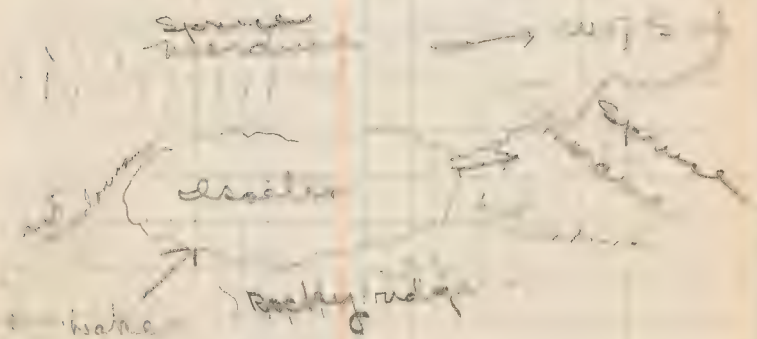
Flood plain below campus

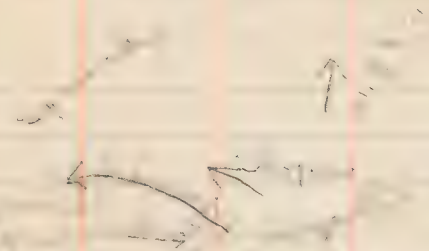
Forest - willow + cat-tails
upland - last attempt - invasion -
Flat present at level of work, N.D
R. Eel formed + peat deposits made -



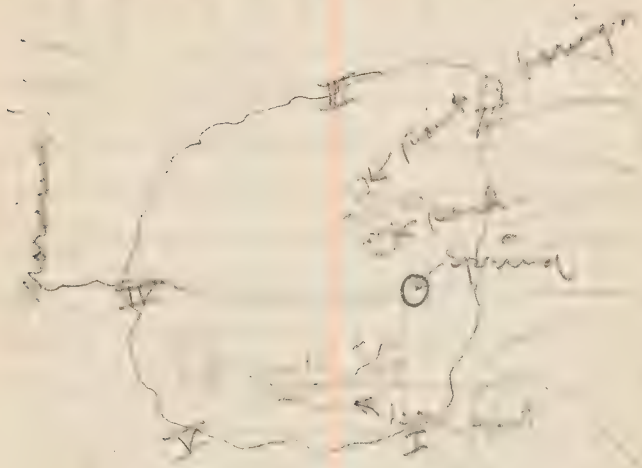


Conifer, Hemlock Bog & Waters -





Alpine Range



I S 40 W
II S 23 W
III S 2 E
IV S 30 E

I W 30
II S
III S 61 W
IV S 23 W.

V
I S

Associat

Calochortus

Penstemon

Eupatorium

Fragaria

Rudbeckia laciniata

Rudbeckia hirta

Helianthus

Campanula rapunculoides

Pleurotus
Marasmius alliaceus
Rubus
Rubus
Crassocarpus
arteriosus
Euphorbiaceae
Pinus melanocarpa
Cucurbitaceae zeuhehe
Solanaceae
Solanaceae
Crassocarpus bupleurifolius
Malva verticillata

Fragaria

Lomatium macrocarpum
populus balsamifera
Valeriana
aconitum columbianum
Geranium maculatum
veronica americana
lupinus humicola
Viola Rydbergii
Mitella apetala
Gaillardia
castilleja
artemisia frigida
" canadensis
Erigeron glaucus
Geranium richardsonii
Grindelia erecta
artemisia trifida
cerastium
cerasium R
cercocarpus D
Chenopodium R
Carex W
campanula W
Caltha W
castilleja

Betula glandulosa

600

42 mi

19.9 mi

50808

Barrett
Sayre
Blair
Kiser

Argemone
Helianthus annuus
Amaranthus
Melilotus officinalis
Cirsium arvense
Lepidium draba
Cardaria pubescens.
Verbascum thapsus.
Xanthium spinosum
Kochia scoparia
Brassica campestris
Tragopogon pratense
Convolvulus arvensis
Stipa comata
Phleum pratense
Triticum vulgare
Petalostemon
Asclepias
Symphoricarpos
Elymus canadensis Lepidota
Rhus trilobata
Salsola pestifer